

# FOOD AND AGRICULTURE ORGANIZATION (FAO) OF THE UNITED NATIONS

## **Good practices and lessons learned related to processes and structures for linking national and local adaptation planning; and addressing the issues of ecosystems, water resources and health in the Agriculture Sector**

**August 2014**

In response to the call for submissions to be considered at SBSTA 41 (December 2014) based on the mandates contained in the conclusions FCCC/SBSTA/2013/5, paragraph 13 (b) and FCCC/SBSTA/2014/L.13, paragraph 7, FAO is pleased to submit relevant information on good practices and lessons learned related to processes and structures for linking national and local adaptation planning and addressing the issues of ecosystems, water resources and health in the agriculture sector. The submission is based on FAO's experience in relation to two specific programmes and country examples.

### **Linking National and Local Adaptation Plans: Nepal**

**National level Priority Framework for Action (PFA)**<sup>1</sup>: Increasing resilience to climate change and climate related extreme events is one of the five priority measures identified under the draft agriculture development strategy (ADS) of Nepal to increase agricultural productivity. The National Adaptation Programme of Action (NAPA)<sup>2</sup> and the National Strategy for Disaster Risk Management (NSDRM) in Nepal have already created a strong momentum for integration of climate risk concerns into agricultural priorities, and call for on the ground action to address both, immediate and future impacts.

In response to the call made by the Government of Nepal, FAO facilitated a multi-stakeholder interactive process to prepare the Priority Framework for Action (PFA) 2011 – 2020. The process' objective was to identify priorities and elaborate and enable donor agencies and development partners to assist the country in building the institutional capacities and technical skills needed for integrated and cross-sectoral implementation of the NAPA priorities and the NSDRM strategies. Within the framework of the NAPA and the NSDRM, the overall aim of the PFA is to assist the Ministry of Agricultural Development (MOAD) in operationalizing the shift from a reactive emergency response-focused approach towards a proactive risk prevention and preparedness in the short term, and climate change adaptation in the long term.

The specific objectives of the PFA are to facilitate: i) strengthening of technical activities for climate change adaptation, reduce impacts of extreme climate events, preparedness and response, and rehabilitation in the agriculture sector; ii) integration of NAPA and NSDRM priorities into the regular activities of MOAD and its operational departments; iii) development of institutional and technical capacities to provide farmers with climate change adaptation and disaster risk management services; and iv) better coordination among key stakeholders in climate change adaptation and disaster risk management at the national, district and local levels in the agriculture sector. The key components of the priority framework include: (i) strengthening of institutional and technical capacity; (ii) assessing and monitoring climate risks (current and future) and vulnerabilities and enhance early warning systems, (iii) improve knowledge management, databases and awareness raising; (iv) reduce climate-related risks and underlying vulnerabilities, and (v) Strengthening capacities and procedures for effective preparedness, response and rehabilitation.

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<sup>1</sup> Government of Nepal, 2011. Priority Framework for Action (2011 – 2020). Climate change adaptation and disaster risk management in agriculture. <http://www.fao.org/docrep/015/an713e/an713e00.pdf>

<sup>2</sup> Ministry of Environment (2010) National Adaptation Programme of Action to Climate Change, Kathmandu, Nepal. [http://www.undp-alm.org/sites/default/files/downloads/nepal\\_napa.pdf](http://www.undp-alm.org/sites/default/files/downloads/nepal_napa.pdf)

The ten-year (2011–2020) PFA proposes ways and means for managing the impacts of climate-related extremes and climate change in agriculture. Its preparation was based on a brain-storming session and stakeholder workshops led by MOAD. The PFA provides a roadmap for addressing the impacts of risks associated with extreme climate events and climate change and seeks to ensure that risk management and climate change adaptation measures are based on national and local priorities, with a strong institutional basis for implementation. The PFA provides guidelines for institutional arrangements, coordination, monitoring and evaluation, and also considers cross-cutting elements such as capacity development, knowledge and communication, partnerships and gender equity.

**District Disaster Risk Management Planning (DDRMP)**<sup>3</sup>: The District Disaster Relief Committee (DDRC) in Nepal becomes active when a district is hit by extreme climate events. To enhance proactive planning for disaster risk reduction, four districts of Nepal have formulated DDRMPs: Arghakhanchi, Kapilvastu, Udaipur and Siraha. Preparation of the DDRMPs was facilitated by FAO in close collaboration with decentralized offices of different Ministries of the Government of Nepal. District development committees have taken a leading role in the coordination and monitoring of plan preparation; District Agricultural Development Offices (DADOs) have also played an important role because of the heavy impacts of extreme climate events on the agriculture sector. During the planning process, government line agencies and local stakeholders are trained to shift from a reactive disaster management approach to one that is more proactive, with greater involvement in prevention and preparedness actions.

To ensure the linking of national to local disaster risk management planning, the DDRMP planning process uses the framework of sectors and priority areas outlined by the NSDRM. To avoid duplication of efforts at local level, the priorities of the National Adaptation Programme of Action (NAPA) and the National Strategy for Disaster Risk Management (NSDRM) are considered as guiding principles for the formulation of local plans. The planning aims at ensuring that disaster risks are addressed in a coordinated way by engaging government line agencies, development partners, local institutions and local communities. With periodic reviews and updates, DDRMPs can provide a cornerstone for reducing duplication of efforts, increasing efficiency and – ultimately – helping to empower communities at large.

The local planning processes supported and extended the national-level needs assessment carried out under the NSDRM by assessing the hazard risk context, analyzing the impacts of hazards and the vulnerabilities faced within districts, and identifying key institutions and critical capacity gaps at both, district and local levels. The participatory assessment at local level included focus group discussions, key informant interviews, key informant workshops, formation of the district level planning committee, secondary data collection and analysis among others. In particular, assessment of impacts of extreme climate events on vulnerable groups, risk analysis based on the information about hazards and vulnerability and district institutional capacity analysis formed the basis for detailed planning and preparation of the action plan. Local stakeholder workshops and feedback sessions contributed to the development of detailed priorities for planning purposes.

### **Climate change adaptation in the Agriculture Sector of the Magellan Region in Chile: Collaboration and experience on subnational planning**

The Magellan Region is the southernmost region in Chile. It is characterized by different climate patterns, including extreme events such as strong winds and frequent frontal systems, causing significant losses of agricultural and livestock production. Although the agricultural, livestock and forestry sector represent only 0.5% of regional GDP, it covers 43% of the surface area and generates 3.5% of annual sales and 13.2% of the regional exports. This area hosts 50% of the Chilean sheep population and it is the main exporter of sheep meat. The region has experienced a decline in all subsectors of agricultural and forestry production, being more marked in the livestock sector (sheep).

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<sup>3</sup> Government of Nepal, 2011. District Disaster Risk Management Plan – Arghakanchi district.  
<http://www.fao.org/climatechange/35702-031dac721bf7bf63928c01de3ae048669.pdf>

This is partly due to the type of extensive exploitation, dependence on natural highly degraded pastures and limited use of technology, among other factors.

The Regional Ministerial Secretariat (SEREMI) of Agriculture in the Magellan region sought assistance from the United Nations Food and Agriculture Organization (FAO) to develop an Adaptation Plan for the forestry, livestock and agriculture sectors to climatic variability and climate change. The planning process was implemented for a period of 18 months between 2010 and 2012.

When the planning process started, there was no information on the specific impacts of climate change on the agricultural, livestock and forestry production systems. The Chilean Government had focused its attention to the impacts of climate change in areas with agricultural potential, dismissing the southern area<sup>4</sup>. In the Magellan region, it is expected that the rise in temperature caused by climate change entails benefits for agricultural production. However, the new weather conditions could also increase the current risks, through the intensification of winds and drier summers or even create new risks through the indirect impacts associated with the increase in temperature and precipitation changes (i.e. erosion and incidence of invasive species).

A planning tool was required to organize adaptation measures that transform the agriculture sector, and to remedy the lack of information about the local weather, as well as to increase local adaptation capacities of farmers and institutions to adapt the production systems. FAO provided decentralized technical cooperation through a technical cooperation project.

The support evaluated the adaptive capacities of the regional agriculture and forestry sectors and concluded that: i) the diversification of the regional agricultural production systems needed improvement, ii) the predominant type of livestock and agriculture production systems needed modernizing, and iii) the capacity development of the human resources in public institutions and research centers and innovation capabilities of forestry and agricultural producers needed to be strengthened. Measures to strengthen the local knowledge and adaptive capacity were identified, and integrated into the territorial specificities for adaptation at subnational level, which migrated from an impact analysis based on future scenarios (the lack of these projections was a barrier to define the aforesaid measures) to an approach based on the adaptive capacity assessment (coping capacity for current variability climate).

FAO's experience confirmed the importance of prioritizing adaptation measures to a scale that allows the improvement of production and enhances the local capacities for adaptation. The planning process for sectoral adaptation demanded to combine several development goals in the region. Furthermore, the experience also showed the importance of synergies between climate change adaptation and mitigation. An Ex-Ante evaluation was made on certain measures promoted by the adaptation plan, including incentives to improve the condition of natural grassland degradation and restoration of natural forests, in addition to improving the resilience of the production system.

The Magellan Region in Chile is the only one in the country with its own adaptation plan, which has high consistency with measures considered for the territory and later defined by the Government of Chile in the National Plan for Adaptation to Climate Change in Forestry and Agricultural Sectors, issued in October 2013<sup>5</sup>. The key lessons with respect to the development of sectoral plans linking national and local adaptation planning process should explicitly consider not only the process in the availability of climate modeling projections but also consider issues regarding the local capacity for adaptation and involve farmers and stakeholders in the formulation of adaptation measures to climate change early in the planning process.

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<sup>4</sup> Second National. Communication on Climate. Change to the UNFCCC. Ministry of Environment. Executive summary available at: <http://unfccc.int/resource/docs/natc/chinc2execsum.pdf>

<sup>5</sup> National Adaptation Plan for the Agriculture Sector in Chile, available at: [http://www.mma.gob.cl/1304/articles-55879\\_InstrumentoFinalCC\\_Silvoagropecuario.pdf](http://www.mma.gob.cl/1304/articles-55879_InstrumentoFinalCC_Silvoagropecuario.pdf)

## **Addressing the issues of ecosystems, water resources and health in Agriculture Sector**

### **FAO's work in relation to ecosystems, water resources and health**

**Context:** The nexus between ecosystems, human settlements, water resources and health is an important emerging issue which requires multidisciplinary intervention. In this respect, the Land and Water Division (NRL) of FAO has already initiated a number of activities in the field and also under UN Water initiatives. The Nairobi Work Program (NWP) provides a unique platform for exchanging innovative ideas and for FAO to expand its collaboration with other participating agencies.

Agriculture is the world's largest water user in terms of volume<sup>6</sup>. With increasing competition for water between industrial, social and agricultural purposes; as well as climate change impacts on availability of water resources, farmers are increasingly looking into non-conventional water resources, like wastewater. In most cases the wastewater does not go through proper treatment processes, which leads to different adverse health impacts and water-borne diseases. On the other hand, in many African countries, irrigation water is being used as a source of drinking water although it does not meet the potable water criteria, which can also be the cause of health related issues, such as diarrhea.

An estimated 801 000 children younger than 5 years of age perish from diarrhea each year, mostly in developing countries<sup>7</sup>. Only in Mauritania, around 2 150 people, including 1 700 children under the age of 5 die each year from diarrheal disease. The World Health Organization estimates that nearly 90% of these deaths are directly attributed to the poor quality of water, sanitation and lack of hygiene. In addition, human settlements in urban and rural areas often add to the complexity of the situation by disturbing ecosystem services, leading to adverse environmental and health impacts.

Various aspects of the problem have been studied in different regions of the world, but very few studies focus on the direct inter-linkages of these factors. This initiative will provide a foundation for integrated multidisciplinary assessment of ecosystems, human settlements, water resources and health inter-linkages to identify risk factors and develop a sustainable management scenario.

**The Methodology:** FAO's work in relation to the topic relies on the collection, analysis and assessment of the existing data. This is often performed by conducting a thorough gap analysis. Availability of primary data at the regional, national and subnational levels (with a current focus into African countries) in relation to ecosystems, human settlements (in relation to agriculture), water resources and health is crucial. For instance, an assessment of the existing information on the epidemiology of water related disease (i.e. type, mortality, average age of affected people, gender, etc.) and identification of the inter-linkages to water quality, food safety and agriculture depends on available data at country level.

FAO will be using a vast number of existing database and guidelines, such as the WHO-FAO Guidelines in "Wastewater Use in Agriculture" for the assessment<sup>8</sup>. To complement the analysis, it is important to consider already existing information with new data from the analysis of water samples taken in selected sites to identify and quantify chemical and microbiological water contaminants. The next step is to conduct targeted testing on foods that are produced using the water analysed and then finding the relation between these different factors. Identification of appropriate indicators and right monitoring tools such as WASH Impact Indicators (i.e. Quantity of water used per capita per day), Annual Monitoring indicators (i.e. Percentage of constructed water supply systems adequately operated), etc. are an essential part of FAO's work on the topic.

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<sup>6</sup> FAO, the State of Food and Agriculture, 1993

<sup>7</sup> WHO and UNICEF, 2012

<sup>8</sup> Guidelines for the safe use of wastewater, excreta and grey water, Volume 2: wastewater use in agriculture, 2006  
[http://www.who.int/water\\_sanitation\\_health/wastewater/gsuweg2/en/](http://www.who.int/water_sanitation_health/wastewater/gsuweg2/en/)

**Inter-agency collaboration:** FAO is already part of a multi-agency UN Water task team on “Water Quality and Reuse” under post 2015 Waste Water Quality Management and Water Resource Management Global Monitoring Mechanism. As part of the mandate, the task team will propose a selection of water quality monitoring options for global data acquisition and reporting, propose modifications to the existing indicators/targets as needed and liaise with other working groups working on complementary indicators. The findings of this task team will benefit the ecosystems, human settlements, water resources and health nexus.

The main objective of the inter-agency collaboration will be to evaluate possible risks reduction strategies and “tailored” management options based on the information obtained and to develop tools to understand and map vulnerabilities/visualise risk. The work is expected to contribute to the development of sustainable strategic management frameworks, trigger behaviour changes among national stakeholders and to bridge the gap between local and national stakeholders - policy and practice.

The programme is expected to enhance the resilience of people, communities and ecosystems to disasters, climate change, etc. As such, the development of safety practices to minimize exposure of farmworkers and their families to risks associated with contaminated water usage in low resource settings are the priority. Improvement and protection of ecosystems, water resources, livelihoods and human well-being are the crucial part of the overall initiative. However, further expansion of capacity developments activities including public education and training to promote the adoption of good practices and sanitation programs are also seen as an integral part of the programme.

**The way forward:** As mentioned above, FAO is actively involved in different initiatives and programs (i.e. Thematic Priority Area on Water Quality, Global Wastewater Initiative, Safe Use of Wastewater in Agriculture, etc.). In all these programs, it is vital to have a holistic approach and analyze the nexus between water quality and other factors, such as health. The results of these initiatives/programs will help FAO expand its presence and active involvement in the areas where the nexus between ecosystems, human settlements, water resources and health is analyzed and implemented.

As a result, FAO is now in the process of developing a program within the above framework in five African countries for identifying the inter-linkage between water quality, agricultural practices, food safety and adverse health impacts – a baseline study for future development of a sustainable management framework for improving people’s livelihood and wellbeing. This project will then lead to a broader second phase for implementation which will expand to cover more African countries and will formulate evidence-based strategic management framework for the region. FAO is therefore looking forward to fully engage with the NWP and all partners and parties in a well-directed and successful collaboration, sharing its good practices and lessons learned while benefiting from others’ achievements.